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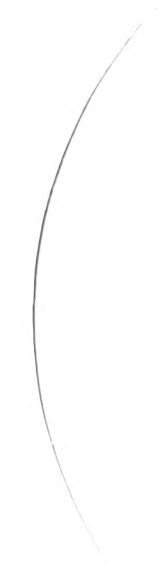

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THE VALUE ADDED OF STRATEGIC IS PLANNING:

UNDERSTANDING CONSISTENCY, VALIDITY, AND IS MARKETS

by

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October 1986

1.0 INTRODUCTION

The potential for using information technology to affect the competitive position of the firm (9,50) has served to highlight the importance of effective information systems planning. That is not to say that research on strategic and tactical IS planning is scarce. As the research reviews of IS planning approaches reveal (31), there are many alternative methodologies. Rather, as the criticality of effectively linking the strategic IS plan to the strategic business plan has increased, the need to better understand the nature of strategic planning, in general, and strategic IS planning, in particular, has also increased. It is now particularly relevant to ask how strategic IS planning adds value to efforts to devise a strategic business plan. In particular, a better understanding is required of both the types of products produced by a strategic IS plan as well as the impact on the overall planning process.

Venkatraman (55) argues that the intersection of interest between IS planning and strategic planning stems not only from a common critical assumption, i.e., a belief that planning positively affects the performance of the firm, but also from the similarity in the research questions and methodological issues that have been pursued. Strategic planning is often approached from a systems view of planning and design. A system can be viewed as a theory of objects, relationships between objects, and performance, (11). Thus, Alexander (1) suggests that, in a general sense, a house is a reflection of an architect's theory of how people live. Similarly, strategic planning can be viewed as a process of building a theory of the firm. That is, planning is an attempt to prescribe sets of objects and relationships such that desirable performance is achieved.

When viewed from this systems perspective, the commonalities between strategic IS planning and strategic business planning are apparent. Researchers in both disciplines have struggled with at least three major systems issues:

(1) ways to represent the levels of abstraction inherent in the planning and design process;

(2) separability (decomposition) and its implications for creating a narrow planning context or frame; and

(3) the need for cooperative behavior among experts.

Each of these issues is resolved explicitly or implicitly by any given planning methodology. The particular technique(s) employed by planners offer the opportunity to strengthen the link between IS planning and strategic business planning. This paper will explore each of these issues in the context of both IS and strategic planning. Section 2 provides a brief overview. Section 3 describes a planning approach that focuses on the consistency between levels of abstraction and the validity of a planning context as two major concepts that strengthen the linkage between IS and business planning. While this approach also calls for a value-based business modeling approach as another concept to improve linkage, this aspect will receive limited attention. Section 4 illustrates the use of the approach for an actual planning exercise in order to further illustrate the concept of assessing the validity of a planning context. Finally, Section 5 summarizes the major concepts founded in the proposed approach and suggests areas for future research.

2.0 STRATEGIC BUSINESS AND IS PLANNING

Each of the three planning issues identified in Section 1 has long been the subject of research. At the core of planning and design is the recognition that this process requires the participant to move between multiple levels of abstraction (19,34). For example, strategic planning is often envisioned as having three levels: corporate, business, and functional (22). Each level reflects varying sets of stakeholders that are affected by or can affect the plan, the extent to which forces external to the firm are explicitly addressed, the extent to which organizational boundaries within the firm are viewed as constraints, and so on. In essence, the planning process addresses the overwhelming complexity represented by a large system by decomposing it according to dimensions such as resources, function, time, space, and so on.

It is not surprising that this decomposition activity is also found in IS planning. The concept of top-down planning and structured analysis emphasizes the need to systematically decompose a complex system into smaller and more concrete representations. The notion of a design transform has been used to describe this process (18,34). A design transform is a conceptual or physical change in the design artifact or target system. Thus, the systems design life cycle (5,18,40) describes the IS design process as a sequence of transformations that moves the designer from an abstract statement of need to a concrete reality of a system that affects the behavior of individuals within the firm. While the IS life cycle has been used primarily to conceptualize design, there is recognition that this activity must be linked to a predesign or planning process.

It has not been particularly useful to focus research on the possibility that there inherently exists a number of transformations that best describe the planning process. IS planning, for example, has been described as having as many as fourteen levels (48). More relevant are two basic issues that must be addressed regardless of the granularity of the levels used to describe the planning and design process: internal consistency and external validity.

Internal consistency reflects the need to ensure that the actions envisioned at one level are correctly operationalized at lower levels. As Churchman (11) suggests, planning and design is, at the extreme, the attempt to prescribe a complete and consistent causal model for a system. To do any less creates the possibility that the proposed plan will not ultimately achieve the desired performance. While planners would not be so bold as to claim they have a complete and consistent causal model of the firm, they nevertheless strive to attain high internal consistency across the multiple levels of planning.

External validity relates to the appropriateness of the resulting planning. Mitroff and Featheringham (42) suggests that errors of the third kind, i.e., a good solution to the wrong problem, are particularly prevalent in ill-structured and messy problem settings. The planner clearly faces a very ill-structured environment and, hence, must be concerned with the validity of the planning process as well as its consistency.

King (28) includes validity and consistency as two critical components of any systematic evaluation of a strategic planning process. His proposed framework uses the concept of external standards as a basis for a comparative assessment of validity. Consistency is assessed in terms of the extent to which the strategic elements of a plan are internally consistent.

2.1 INTERNAL CONSISTENCY

The issue of internal consistency has been addressed in two major ways. The dominant focus of most IS planning methodologies is the creation of an internally consistent behavioral or process model of the firm. The planning process can be viewed as defining a series of means/ends chains that move from abstract concepts of the firm's behavior to realization of particular systems and products that affect the behavior of individuals in (hopefully) predicted ways. For example, a major contribution of the Critical Success Factor (CSF) planning methodology is the introduction of a means-end relationship between the goals of individuals and their needs for information. Thus, we do not ask what information you desire to meet your goals (desires). Rather, we first establish those factors (abstract processes) that will most affect your ability to succeed (goal attainment) and then ask how these behaviors induce desires for information. This means-end linkage has served to create an intermediate design transformation that has proven valuable to the overall IS planning and design process.

The IS planning literature clearly reflects this emphasis on internal consistency of means/ends relationships (behavior). Business System Planning (25), and Structured Analysis (18), to name a few, attempt to systematically guide the IS planner through the process of creating these interlinked behaviors that range from abstract representations of the firm to rule-based procedures for producing information in a purposeful manner. A quite similar tradition is found in strategic planning as reflected by the flow from corporate to business to function planning (29,51). It is interesting to note, for example, that Porter (47) describes strategic planning in a similar fashion by emphasizing the concept that a strategic plan provides policies (means) to achieve goals (ends).

More recently, the need to achieve consistency in <u>beliefs</u> of individuals as well as in their behaviors has been recognized by strategic planners. In the strategic planning literature, consistency of beliefs has been addressed by research on issues such as corporate culture (52), the concept of organizations enacting their environment (13), and perhaps more indirectly, methodologies emphasizing participatory planning and design (4,5,15). Mason and Mitroff (39) formalized the need to explicitly surface underlying assumptions or beliefs in their Strategic Assumption Surfacing Technique (SAST). In part, this approach argues that attempts to gain shared assumptions, or at least, to clarify and perhaps reduce conflict that revolves around uncertain assumptions, are fundamental to the creation of a corporate strategy. While many of the means/ends (behavior-oriented) methodologies attempt to incorporate discussion of assumptions, the SAST methodology is an example of a strategic planning approach that centers on understanding and, hopefully, attaining consistency in beliefs.

Henderson et al (21) combined assumption surfacing and critical success factor analysis in order to provide a more comprehensive IS planning approach. Mason and Mitroff (39) and others have applied SAST or variations on this methodology in an IS planning context. Konsynski et al (33) have incorporated the techniques of assumption surfacing and analysis into a generalized IS planning support system. In essence, the IS planning field is recognizing, as is the strategic planning field, that the lack of consistency with respect to critical beliefs or assumptions could create a fundamental instability in a plan and hence must be explicitly addressed.

2.2 EXTERNAL VALIDITY

The focus on beliefs and assumptions highlights a second major issue that must be addressed in the planning process: the frame or planning context. Research ranging from individual decision making to planning recognizes the fundamental dilemma discussed by Churchman (11). That is, in order to cope with the complexity of a system, the planner must define its boundaries. But doing so clearly limits the scope of the planning effort and hence may not incorporate all relevant co-producers of performance. If this is the case, the planner risks prescribing a system that is flawed. Stated differently, the planner risks committing an error of the third kind (42), that is, defining a system that solves the wrong problem.

How does the planner validate a given context or frame? If one creates a model of the business, surfaces assumptions, and generates internal consistency for both beliefs and behavior, is there not still a risk of a significant methods bias? That is, might not all those involved in the planning process systematically ignore an aspect of reality that is critical to the success of the strategy? This fundamental issue is addressed to varying degrees in the strategic planning and IS planning literature. We refer to efforts to insure correctness of the planning process as the attempt to achieve external validity.

Mason and Mitroff (38) used the concept of alternative inquiring systems to emphasize the need for the IS planner to explicitly consider the mechanisms for guaranteeing validity of a plan or design. The use of dialectics in strategic planning (11,38,39) is an example of an attempt to increase the likelihood that the chosen strategy is robust and valid. Strategic planning and IS planning processes often rely on an implicit strategy of using domain experts or a Lockean consensus approach to validity assessment (38). The limitations of a Lockean approach discussed by Churchman (11), Mason & Mitroff (38) and others suggests a need to establish an alternative mechanism to examine the external validity. That is, the external validity of the plan must be as clearly understood as the internal consistency of that plan. As the planning environment becomes more turbulent, the issue of external validity becomes more critical as well as more problematic. This issue is an important component of this paper and will be illustrated in the case discussion in Section 4.

2.3 COOPERATIVE BEHAVIOR

A third major issue addressed in the planning literature centers on the need for cooperative behavior in the planning process. The need to tap many sources of expertise and gain a shared commitment is obviously related to the issues of internal consistency and external validity. While not the focus of this paper, the need to gain cooperation among experts is a major component of most theories of planning and design. The IS planning literature has borrowed heavily from research on change management (26,27), participatory decision making (4,5,35), and political science (2,37) as a basis for prescribing approaches to design. Strategic planning has recognized both the need to access multiple experts for their knowledge base as well as to incorporate key stakeholders in order to achieve consistency and commitment (5,39,40,48). How the planner seeks to achieve the distribution of participation and influence is a major component of the planning process strategy.

Finally, the issue of impact must be highlighted. Churchman (11) argues that a system cannot exist without a concept of performance. King (28) suggests that systematic assessment of the performance impact of a plan requires understanding the planning process in terms of a variety of dimensions, including adaptiveness, effectiveness, and so on. Clearly, to define planning as a purposeful activity requires the planner to consider the relation of the recommended system to a notion of performance. Strategic IS planning often assumes that the goals that provide the foundation and direction for impact have been passed down via the more abstract process of

strategic business planning. The methodology proposed in this paper will directly link strategic business goals to the IS strategy. The concept of internal consistency is one means to assess the effectiveness of this linkage. To the extent that this linkage is effective, the opportunities or markets for IS products and services (including investment in a data infrastructure) will have high impact. Needless to say, ensuring a valid and consistent linkage between the business plan and the IS plan becomes a necessary condition for rational investment in IS.

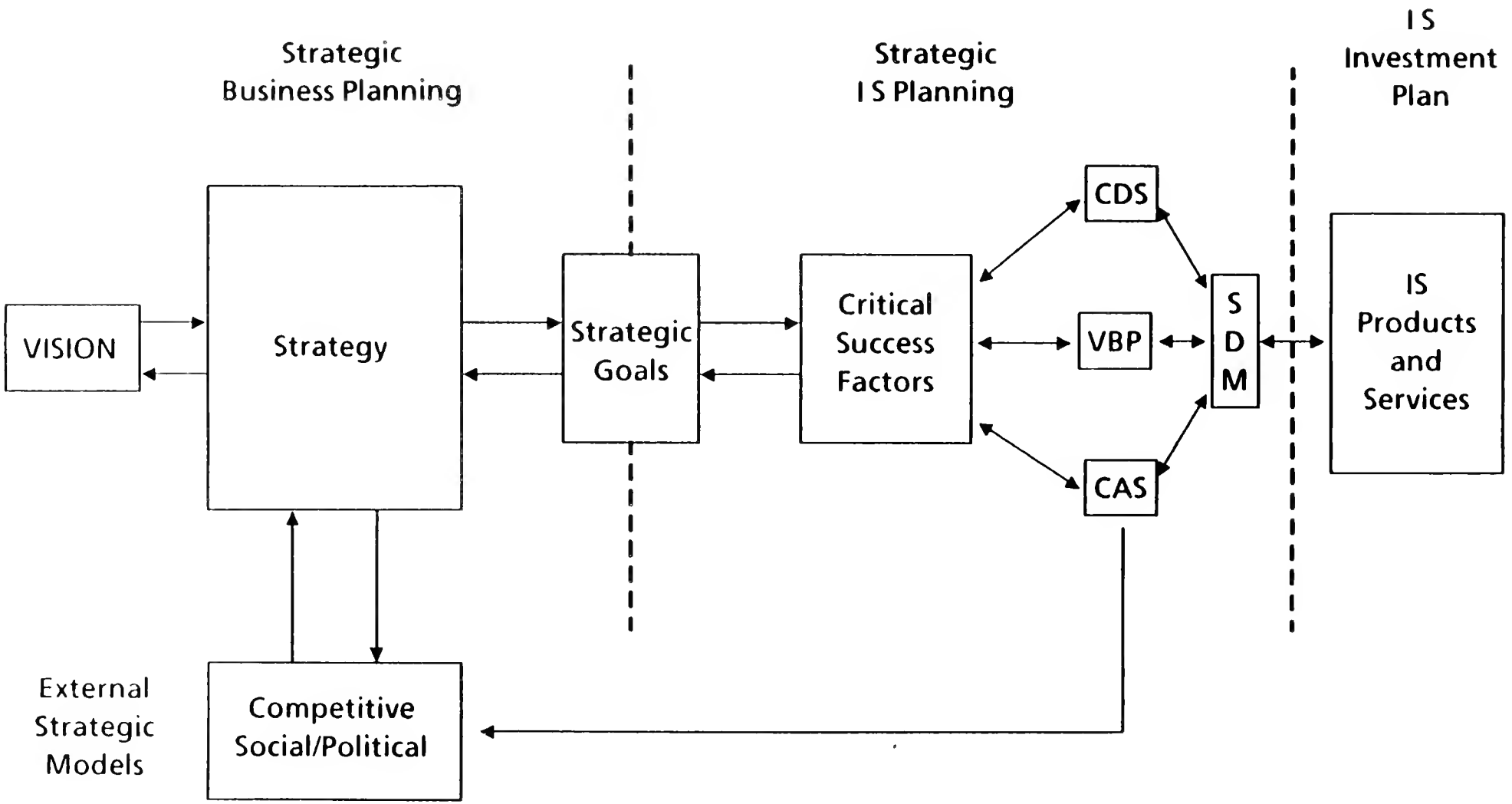
The following section describes a strategic IS planning approach and its relationship to a strategic business planning process. While the issues of internal consistency and external validity are the main focus, the need for an impact orientation is also discussed. The requirements for cooperative behavior among experts are left implicit in this discussion.

3.0 A STRATEGIC IS PLANNING APPROACH

3.1 STRATEGIC BUSINESS PLAN

Figure 1 depicts the proposed planning methodology. The planning process is viewed as an attempt to create an internally consistent and externally valid IS plan. The sequences of means-ends relationships or transformations become increasingly concrete or product/service specific as one moves from the world of business strategy to specific IS products. The IS planning process assumes the existence of a vision and strategy relationship. The vision is analogous to the traditional business planning

Figure 1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concept of mission. It is a futuristic picture of the organization and its environmental surroundings. Strategy is then the macro-level articulation of the means to achieve this vision. It is macro in that it reflects the direction and magnitude of efforts in particular markets and the criticality of various organizational resources to these efforts. In this context, it is assumed that the strategic business planning process produced a set of strategic goals and, at least, an implicit set of assumptions underlying these goals.

There are a large number of planning processes used to create a strategic business plan. For the purposes of this discussion, the mechanism used to generate this business plan is not addressed other than the emphasis that will be placed on understanding the consistency between beliefs and behaviors that underlie the IS plan and the business plan. For this reason, an explicit assessment of assumptions is warranted. The reader should review the SAST methodology developed by Mason and Mitroff (39) for an example of an existing technique for assumption definition and analysis. It should also be recognized that various techniques including value added flow models (47), Critical Success Factors (49), and others have been used to help define the key processes or behaviors that are involved in the set of strategies produced by the Strategic Business Plan. Both these macro or abstract behaviors and the assumptions will be used as a basis to establish consistency between the IS and business plan.

3.2 STRATEGIC IS PLAN

As indicated in Figure 1, a consequence of identifying the key processes or behaviors and assumptions at the business strategy level is the formation of strategic goals that will be acted on by the organization. The vision/strategy (means-ends) relationship thus provides the context or frame of reference for a subsequent and more specific means-ends relationship. This phenomenon has been recognized by users of the CSF methodology. Rockart (49), Boyton and Zmud (6), and others point out the hierarchical relationships that emerge in an organizational CSF planning process. That is, the CSFs for the executive management team often become specific goals for organizational sub-units. Henderson, Rockart, and Sifonis (21) note, however, that while consistency between levels of means-end relationships is one requirement for internal consistency for the planning process, internal consistency must also exist among the critical beliefs or assumptions. As will be discussed, the proposed methodology builds upon the need to establish consistency for both behavior and beliefs as one mechanism to ensure that the strategic information systems plan is appropriately linked to the strategic business plan.

The proposed strategic IS planning process uses the goals established in the strategic business planning process to provide a direct impact linkage in the IS plan. These goals serve the equivalent role in the IS planning process as the vision did in the business planning process. The CSFs derived from these goals provide a basis to develop four IS planning products: Critical Decision Set (CDS), Value-Based Processes (VBP), Critical Assumption Set (CAS) and the Strategic Data Model (SDM).

3.2.1 IS PLANNING PRODUCTS

The five object sets, (1) Critical Success Factors, (2) Critical Assumption Sets, (3) Critical Decision Set, (4) Value-Based Processes, and (5) Strategic Data Model, are viewed as the primary products of a strategic IS planning effort. The CSFs provide the impact focus or value oriented boundary for the strategic IS planning effort. Their formal use helps to ensure that the debate during the IS planning process will be directed to policies and behaviors that are critical to the successful achievement of the firm's strategy. It is important to note that the CSF methodology (49) uses individual interviews from a broad range of strategy stakeholders as a means to establish these critical factors. Focus groups or other mechanisms are often used to validate and gain consistency and commitment among these stakeholders with respect to these CSFs. The point is that CSFs are elicited at the level of resource managers charged with attaining specific strategic goals. In this sense, they represent a more concrete behavior than the broader organizational policies or behaviors generated during the strategic business planning effort. Of course, the consistency between these two abstract behaviors is a traditional measure of the internal consistency of a plan.

The four object sets linked directly to the CSFs are (1) the Critical Decision Set (CDS), (2) Value-Based Processes (VBP), (3) the Critical Assumption Set (CAS), and (4) the Strategic Data Model. Each of these sets defines an important market to which the IS organization can provide products and services. That is, the sets do not specify directly an IS systems

product (application) or service. Rather they identify an opportunity or market for IS products and services that should have strategic value to the firm.

The CSFs are used as a planning context to help ensure that the elements in each of these sets are value focused. The critical decision set (CDS) are those decision processes that will most affect one or more CSFs. For example, if a CSF is "To retain highly skilled employees", a CDS may be the promotion decision, hiring decision, or perhaps the job assignment decision. The objective is to identify a subset of critical decisions from the set of all possible decision processes in the firm. This effort serves to qualify the DSS market and suggest high impact products or services for investment. Further, it provides a decision-making view of the data resource that can help to establish those data that are strategically important to the firm.

The Value-Based Processes set recognizes that achievement of the CSFs will ultimately rely on critical business processes being performed efficiently and effectively. Rockart (49) has likened the CSF methodology to a quick and dirty Business Systems Planning process (27). That is, it is a means to focus a business modeling process on those processes critical to the firm. Thus, while recognizing the need to understand processes and their relationship to the data resource, this methodology uses the term Value-Based Processes to emphasize a value focused process model that captures the strategically important processes and their interrelationships.

This concept is similar to the notion of value-added processes described by Porter (47). However, there is not necessarily the concept of a cumulative or value-added flow, but rather a recognition that each function or process is tightly linked to a CSF and therefore effective management of it will add strategic value to the firm.

The Value Based Process model provides two major contributions. First, it provides a monitoring and control perspective to the potential set of IS markets. This view often leads to products and services that have been the traditional domain of MIS. Second, it provides a direct link to the existing application base. Since many of the existing systems were developed to support functions or processes, the inclusion of this object set will help IS planners to assess their strategy in the context of the existing IS asset base. This aspect will be critical to the ability to effectively translate the strategic IS plan into a viable development action plan.

The critical assumption set (CAS) are those assumptions that underlie the CSFs. They are the reasons why the planners and stakeholders believe the CSFs are valid. The assumptions can be used by the planner in two ways. First, they serve to identify a critical IS market, Executive Support Systems (ESS). Here, ESS are defined as information systems used to monitor and analyze critical assumptions. As the term suggests, this market is of particular relevance to senior executives. Since these assumptions often involve beliefs about the environment, thereby requiring external data, the CAS offers a significantly different and important view of the strategic data model. Second, they provide data that can be used to assess the internal consistency and external validity of the IS plan. This usage of the assumption set will be discussed in the next section.

Finally, the fourth market emerging from the IS strategic planning process is the Strategic Data Model (SDM). The representational form of the SDM is often an entity relation data model and is similar to the global data modeling concept (18,25) currently advocated by those pursuing a data resource management strategy. However, the strategic data model differs in a critical way: there is no attempt to create a complete and consistent data model. Rather, the focus is on identifying the significant value-added data classes and how they relate.

The strategic data model provides two services. First, it facilitates the coordination of investments across a range of management support system markets, e.g., DSS, MIS, and ESS. Second, it establishes where to focus initial efforts to more effectively manage the data resource. Each of these services is of increasing importance to the effective management of the IS function.

3.2.2 CONSISTENCY AND VALIDITY

Beyond identifying the products of a strategic IS planning effort, the proposed methodology addresses two related issues: the internal consistency and the external validity of the IS plan.

The internal consistency of the plan should be assessed for both beliefs and behaviors. Since this strategic IS planning approach explicitly elicits both CSFs and critical assumptions, the internal consistency of the plan with respect to the strategic business plan can be directly assessed. That is, a

given transformation often requires significant organizational interpretation and hence is subject to inconsistency. The strategic business plan is generated from a different, more general, planning context than the IS plan and often involves individuals who will not directly participate in IS resource planning. As a result, inconsistency in either behaviors or beliefs is possible. The approach taken here allows the planner to use the CSF's and assumption to identify possible inconsistencies and to focus attention on resolving them.

External validity of the IS plan addresses the possibility that a given planning process may omit or incorrectly address relevant factors. An externally valid plan is one that does not suffer significantly from the collective bias of those involved in the process. As discussed in Section 2, techniques such as a dialectic planning process may serve to increase the likelihood that a given plan is externally valid. The approach taken herein adopts the notions discussed by Churchman (11) and King (28) and others. External criteria and multiple models are used to assess the validity of a plan. In particular, the CAS provides data for this assessment using multiple external competitive or social models. The results of this assessment are fed back to the strategic business planner. Such an assessment can indicate inconsistencies or omissions suggesting either: (1) the strategic business plan is invalid, or (2) the strategic business plan was not communicated or interpreted at the lower levels in an appropriate way. Either planning process failure could result in an invalid IS strategic plan.

While many external models could be used to assess the external validity of IS planning, the two important classes include a competitive model of the firm and a social/political model of the firm. Porter's (47) competitive forces model is used to illustrate an assessment of the CAS in Section 4.0. The CAS are used to determine if the plan addresses each of five competitive forces. A social/political checklist, i.e., social/political factors that could affect the successful execution of strategy, could also be used to assess the extent to which the IS strategy is sensitive to critical social/political trends.

A final note is appropriate at this juncture. The CSF and SAST methodologies provide the means to produce the components or products of a strategic IS plan. The specific techniques used to implement these methodologies are a related but distinct issue. For example, a dialectic process is often used as a technique to generate and test assumptions. In contrast, using individual interviews followed by focus groups is a common technique for generating and testing CSFs. Henderson et al (21) use a structured group technique, Nominal Group Technique, to generate assumptions. The point is that any specific methodology, including the proposed method illustrated in Figure 1, may be enacted via a variety of specific planning techniques. A discussion of how to choose such a technique is beyond the scope of this paper, but the planner should ultimately consider the unique tradeoffs or costs and benefits associated with a given technique. The reader should review Henderson and Nutt (20) or King (28) as examples of how alternative planning process techniques might be evaluated.

4.0 ASSESSING THE EXTERNAL VALIDITY OF AN IS STRATEGIC PLAN: AN EXAMPLE

A strategic IS plan was developed for a large retail organization. This firm manages a large number of convenience stores and has been an innovative leader in terms of expanding the range of products and services offered by these stores.

The strategic IS planning process proceeded as indicated in Figure 1. The executive management team, as well as many upper level managers were interviewed to elicit their CSFs and CASs. Focus group sessions were used to clarify and consolidate both the CSFs and the CAS. In total, over 50 interviews were concluded.

The IS strategic planning process was conducted subsequent to completion of a strategic business planning process. Although Figure 1 captures the nature of the overall planning process, it is important to recognize that the business planning process and IS planning process utilized different consulting firms as external facilitators and had significant differences in terms of individual participation and influence. Of course, this is often the case. Thus, as discussed earlier, the overall planning process required effective transmission of the products of one planning stage to the participants of a subsequent stage, given shifts in the level of participation and influence of specific individuals. In this case, while the strategic business planning process did not explicitly develop CSFs, this planning process was quite extensive and did generate a set of strategic goals for the organization. These goals were used as a starting point for the strategic IS planning exercise.

Table 1 shows the thirteen strategic assumptions resulting from the IS planning process. Although these assumptions have been modified somewhat to avoid revealing specific concerns of the firm, they represent the basic orientation of the critical assumption set. Figure 2 shows an assessment as to the distribution of these assumptions across the five competitive forces defined by Porter (47).

Porter's model argues that the competitive position of the firm is affected by five major forces: (1) intra-industry rivalry, (2) buyer power, (3) supplier power, (4) threats of new entrants, and (5) possible substitute products. The description of these competitive forces provides a basis to evaluate each assumption and classify that assumption as to the particular forces that it addresses. It should be noted that this classification process is in itself an assessment. Overlap is possible. The debate necessary to classify a particular assumption often helps to clarify and perhaps suggest alternatives to this assumption. In this case, the assessment was conducted by a member of the planning team and an outside consultant familiar with the Porter model. The assessment attempted to produce a consensus classification.

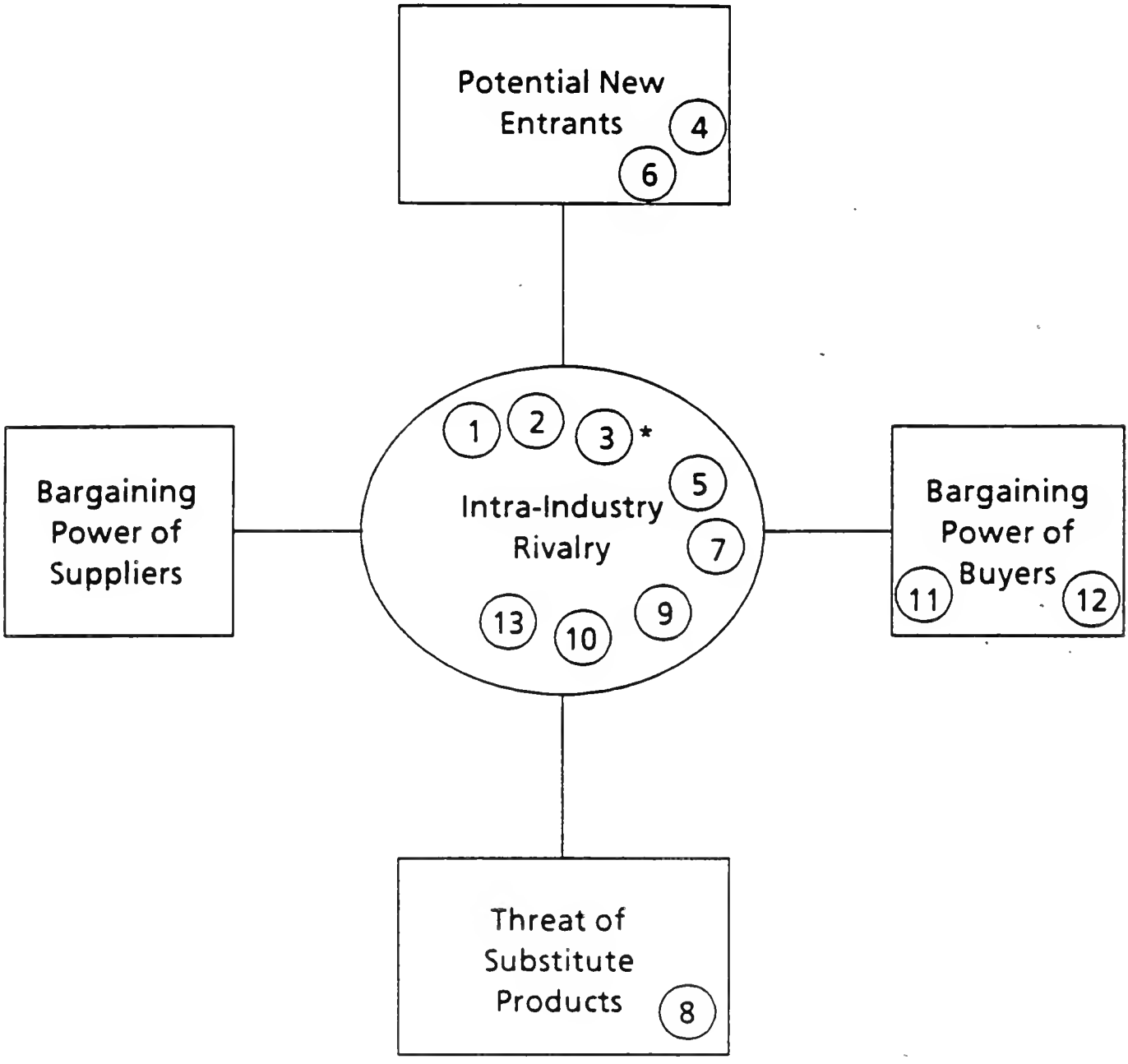
Two significant issues emerge from the assessment illustrated in Figure 2. First, as might be expected, the strategic IS plan is being driven predominantly by assumptions that relate to how this firm competes with intra-industry rivals. Further, a critical assumption did recognize an emerging threat of new entrants, e.g., that gas stations could expand their services to include products and services offered by convenience stores.

Table 1

Critical Assumptions

1. Existing retail outlets are the core/primary business.
2. Industry is mature.
3. Quality people with specific characteristics are needed and will be less available.
4. Energy related organizations are a long term competition.
5. If we cannot broaden our market, our growth is limited.
6. Working with other energy companies is complementary to strategy.
7. Acquisition is not a primary path for growth.
8. Electronic service will be a viable marketplace.
9. Technology will improve productivity in specific ways.
10. It will be 2-3 years before we achieve key information flow from a strategic IS system.
11. The retail business is market driven and is changing in specific ways.
12. Different types of markets must be managed differently.
13. Our real estate investment must be completed.

Figure 2
Initial External Assessment



* This is an example of a social/political assumption that does not fit easily within the Porter framework.

Perhaps more significant was the lack of assumptions relating to threats from substitute products and supplier power. Discussions on this apparent omission suggested that the IS strategic plan did not reflect all aspects of the emerging business strategy. That is, the use of this external model to assess the products of the IS plan indicated a lack of validity. For example, discussions indicated that the lack of critical assumptions concerning threats of substitute products was not surprising. Given the nature of the products and services delivered by these retail outlets, significant erosion of the firm's competitive position caused by substitute products is unlikely. However, effective management of supplier relations is a key strategic issue. In fact, the firm is continuing to backward integrate in order to affect their supplier relations. Not surprisingly, there was clear intent to invest in information technology that would affect their ability to remain flexible in their supplier relationships. The lack of assumptions relating to this issue was viewed as an omission and indicated the need to both adjust the IS strategic plan and check to be sure that the strategic business plan adequately addressed this issue.

A second major concept illustrated by this example is the adaptive nature of many strategic planning processes. Essentially, this approach provides for an action-oriented strategic planning process. The initial strategic business plan is created and then tested in the context of strategic resource planning efforts. This iterative strategy is not to be confused with the concept of incrementalism. The intent of the strategic planning process is to prescribe a set of goals (ends) and policies (means) that will achieve these goals (means), and to foster a consistent set of

beliefs that will constitute the foundation for interpreting the environment. Needless to say, this is a highly abstract task. An iterative planning process recognizes that resource strategies provide an intermediate transformation between the business strategies and the investment or action plans necessary to accomplish a given business strategy. The resource strategy not only helps to set a more concrete planning context for the action plan but also serves to provide evidence as to the internal consistency of the strategic planning process in general as well as the external validity of the resource plan given the interpretation of the business strategy by the organization. The emphasis on "interpretation" reflects the fact that an invalid plan can result from omission of key issues introduced by a given planning context or from the imperfect communication link between the two levels of planning is imperfect.

This concept is quite consistent with the current planning and design methodologies advocated for turbulent, ill-structured environments. For example, evolutionary or adaptive planning is the dominant approach taken for DSS (27,44). The need for multilevel feedback during a design process, particularly to address the validity of a planning frame is emphasized by Churchman (11) and recognized by the strategic planning research community (36,51). As illustrated by this example, the feedback from the more concrete IS strategy planning effort can provide a means to assess the external validity of a strategic resource plan as well as provide evidence as to the effectiveness of the linkage between two levels in a planning process.

5.0 SUMMARY

This article attempts to define the components of a strategic IS plan and show how the products of this effort can serve three purposes:

(1) provide a context for defining the markets and thereby the products and services to be delivered by the Information Systems function;

(2) provide a basis for establishing the internal consistency of an IS plan for both behavior and beliefs; and

(3) provide a basis for assessing the external validity of an IS plan.

This last issue is the focus of the example discussed in Section 4. An important issue relates to the selection of an external model(s) to be used in the validity assessment. Why choose Porter's (47) model over other strategy competitive frameworks? As Churchman (11) argues, the answer to this question is to use multiple models, not to attempt to find a single universal model. For example, one could assess the validity of the IS strategy from a social political perspective. To what extent do the assumptions address changing social/demographic trends in their markets? Have they explicitly considered possible regulatory trends? Even if the strategic business planning process effectively used techniques such as stakeholder analysis in order to minimize the risk of omitting a key issue, poor communication of the strategic business plan is still possible. Thus, a validity assessment is still warranted.

A final issue concerns the appropriate level of effort committed to the strategic business planning process prior to the strategic resource planning effort. As advocated by planning methodologies such as adaptive design, the

level of effort for strategic business planning in the initial iteration should be sufficient to identify highly leveraged opportunities. This could be accomplished with an intent to iterate. In contrast, the traditional top-down strategic planning process often assumes little organizational learning and little iteration as a result of the strategic planning process. The position taken here is that many organizations are facing novel opportunities and threats that are due, in large part, to new information technology. As a result, a strategic planning process that emphasizes learning and, hence, focuses on iterative feedback and validity checks between the strategic business plan and strategic IS plan will prove beneficial to the organization.

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